8.14 Water Resources

8.14.1 Introduction

The City of Vernon (City) proposes to develop a power plant (VPP) on a 13.7-acre property at the southeast corner of Fruitland and Boyle avenues. The VPP will be a 914-megawatt (MW) net (at 65 degrees Fahrenheit [°F] with duct burners and evaporative cooling)/943-MW (gross) combined-cycle generating facility configured using three natural-gas-fired combustion turbines and one steam turbine. Two transmission line options are being considered to connect the plant to Southern California Edison's (SCE) Laguna Bell Substation. Natural gas for the facility will be delivered via approximately 2,300 feet of new 24-inch pipeline that will connect to Southern California Gas Company's (SoCalGas) existing gas transmission line (Line 765). Potable water for drinking, safety showers, fire protection, service water, and sanitary uses will be served from the City's potable water system through two 10-inch pipelines connecting to the City's water mains. One would connect in Boyle Avenue and the other in Fruitland Avenue. Recycled water for industrial purposes will be provided by the Central Basin Municipal Water District (CBMWD) through a nominal 16-inch carbon steel (or if using high density polyethylene [HDPE], a 20-inch) water line connecting to its recycled water line in Boyle Avenue, adjacent to the plant site. The blowdown will be sent to Sanitation Districts of Los Angeles County (LACSD) via a new 2,400-foot section of City sanitary sewer line.

This section provides a discussion of the existing water resources in the vicinity of the Vernon Power Plant (VPP) site and assesses the potential effects of project construction and operations on water resources. Specifically, this chapter discusses the project and its potential effects in the following areas:

- Proposed use of recycled water for cooling and process water needs
- Water supply and quality
- Disposal of wastewater
- Compliance with federal, state, and local water policies
- Stormwater discharge
- Flooding

8.14.2 Applicable Laws, Ordinances, Regulations, and Standards

Federal, state, and local LORS applicable to water resources and conformance are discussed in this section and summarized in Table 8.14-1.

8.14.2.1 Federal

The Clean Water Act authorizes the U.S. Environmental Protection Agency (USEPA) to regulate discharges of wastewater and stormwater into surface waters by issuing National Pollutant Discharge Elimination System (NPDES) permits and setting pretreatment standards. In California, the Regional Water Quality Control Boards implement these permits at the state level, but USEPA may exercise it jurisdiction at its discretion. Relevant NPDES permits are discussed below under State LORS.

TABLE 8.14-1
Laws, Ordinances, Regulations, and Standards Applicable to VPP Water Resources

LORS	Applicability	How Conformance Is Achieved	Agency/Contact
Federal			
Clean Water Act/Water Pollution Control Act. P.L. 92-500, 1972; amended by Water Quality Act of 1987, P.L. 100-4 (33 USC 466 et seq.); National Pollutant Discharge Elimination System (NPDES) (CWA, Section 402); Toxic and Pretreatment Effluent Standards (CWA, Section 307)	Prohibits discharge of pollutants to receiving waters unless the discharge is in compliance with an NPDES permit. Applies to all point-source discharges, including industrial wastewater and stormwater runoff, during both construction and operation. Sets forth pretreatment requirements for the industrial discharges into publicly owned treatment works.	Compliance with NPDES permit requirements from the California Regional Water Quality Control Board, Los Angeles Region (LARWQCB) (see below under State) and local agencies (see below under Local). See Subsections 8.14.6.2 (Construction Stormwater), 8.14.6.3 (Industrial Stormwater), and 8.14.6.4 (Plant Wastewater).	See below under State
State			
Federal Clean Water Act (implemented by State of California) and Porter-Cologne Water Quality Control Act	Implements and enforces the federal NPDES permit program through conformance with beneficial uses and water quality objectives in the Basin Plan as well as conformance with any applicable Total Maximum Daily Load requirements.	Operational discharges of industrial and sanitary wastewater streams are conveyed to the LACSD's sewer system for treatment and disposal; discharges are regulated under an existing NPDES permit for the Carson Joint Water Pollution Control Plant (NPDES Permit CA0053813, Order No. 00-043). See Subsection 8.14.6.4 (Plant Wastewater).	LACSD P.O. Box 4998 Whittier, CA 90607-4998 James F. Stahl, Chief Engineer and General Manager (562) 699-7411
		Stormwater runoff is conveyed through the City of Vernon and Los Angeles County Flood Control District's storm drainage system; discharges are regulated under an existing NPDES permit for municipal stormwater (NPDES Permit CAS004001, Order No. 01-182). See Subsection 8.14.6.3 (Industrial Stormwater).	LARWQCB Stormwater Permitting Department Carlos Urrunaga Phone: (213) 620-2083
		Construction stormwater discharges on sites greater than 1 acre require compliance with statewide construction discharge permit (NPDES Permit CAS000002, Order No. 99-08-DWQ). See Subsection 8.14.6.2 (Construction Stormwater).	SWRCB Stormwater Program Phone: (916) 341-5537

TABLE 8.14-1
Laws, Ordinances, Regulations, and Standards Applicable to VPP Water Resources

LORS	Applicability	How Conformance Is Achieved	Agency/Contact
		Stormwater discharges during operation of power plants require compliance with statewide program for industrial uses (NPDES Permit CAS000001, Order No. 97-03-DWQ). See Subsection 8.14.6.3 (Industrial Stormwater).	SWRCB Stormwater Program Phone: (916) 341-5538
California Water Code §461 and §13550, and SWRCB Resolution 75-58	Encourages the conservation of water resources and the maximum reuse of wastewater.	The VPP proposes to use recycled water for process and cooling water and is, therefore, in conformance with these code sections and Resolution No. 75-58. See Subsection 8.14.4.1 (Water Sources and Use).	LARWQCB Xavier Swamikannu 320 West 4th Street. Los Angeles, CA 90013-2343 (213) 620-2094
Local			
LACSD, Wastewater Ordinance, Section 401	Regulates connections to the County's sewer system. Implements requirements of NPDES Permit for the Carson Joint Water Pollution Control Plant (NPDES Permit CA0053813, Order No. 00-043).	The City of Vernon will comply with Section 401 for all discharges to the sewer system and will obtain a Permit for Industrial Wastewater Discharge. The Applicant will comply with all permit conditions, including the following: discharge limitations, pretreatment requirements, peak flow restrictions, dewatering discharges, payment of fees, and monitoring and reporting requirements. See Subsection 8.14.6.4 (Plant Wastewater).	LACSD P.O. Box 4998 Whittier, CA 90607-4998 James F. Stahl, Chief Engineer and General Manager (562) 699-7411
City of Vernon, Chapter 21 of the Vernon Municipal Code (Stormwater and Runoff Pollution Control).	Regulates connections to storm drainage facilities. Implements stormwater quality requirements consistent with countywide permit (NPDES Permit CAS004001, Order No. 01-182).	The City of Vernon will issue a connection permit and (together with the Los Angeles County Department of Public Works) will demonstrate compliance with countywide Standard Urban Stormwater Mitigation Plan. See Subsections 8.15.6.1 (Drainage) and 8.14.6.3 (Industrial Stormwater).	City of Vernon 4305 Santa Fe Ave. Vernon CA 90058 (323)583-8811

In addition, Section 307 of the Clean Water Act requires pretreatment of industrial discharges into publicly-owned treatment works. Industrial discharges from VPP would be subject to these requirements, as implemented and enforced by the Sanitation Districts of Los Angeles County (LACSD), Wastewater Ordinance, Part IV—Industrial Wastewaters. Because the industrial pretreatment standards would be enforced by the LACSD, they are discussed below under local regulations.

8.14.2.2 State

8.14.2.2.1 State Water Resources Control Board and Los Angeles Regional Water Quality Control Board

Industrial and Municipal Stormwater NPDES Permits

The State Water Resources Control Board (SWRCB) implements regulations under the federal Clean Water Act requiring that point source discharges of stormwater (which is a flow of rainfall runoff in some kind of discrete conveyance such as a pipe, ditch, channel, or swale) associated with industrial activity that discharge either directly to surface waters or indirectly through municipal separate storm sewers must be regulated by an NPDES permit (SWRCB, 1997). The SWRCB has issued Waste Discharge Requirements (WDRs) for discharges of stormwater associated with industrial activities (such as the proposed project),excluding construction activities (NPDES Permit CAS000001, SWRCB Order 97-03-DWQ). The project will require a Stormwater Pollution Prevention Plan (SWPPP) that would specify management measures necessary to meet WDRs to ensure receiving water quality is protected. The SWRCB requires a Notice of Intent to be filed prior to any stormwater discharge from industrial activities, and that the SWPPP be implemented and maintained onsite. This statewide General Permit is currently undergoing a re-issuance process with the SWRCB; the project would comply with the current General Permit and with any revisions to the General Permit.

On December 13, 2001, the Regional Water Quality Control Board, Los Angeles Region (LARWQCB), adopted Order No. 01-182. This Order is the NPDES Permit (NPDES No. CAS004001) for municipal stormwater and urban runoff discharges within the County of Los Angeles. This Municipal Permit was issued pursuant to the USEPA's Phase I Municipal Program, and requires municipalities to develop and implement a program addressing stormwater runoff pollution issues in development planning for public and private projects. Because the municipal stormwater standards would be enforced by the City of Vernon and the Los Angeles County Department of Public Works (acting as the Los Angeles County Flood Control District), they are discussed below under local regulations. This permit will also be undergoing a re-issuance process within the next year. The VPP will comply with the current permit and any relevant revisions to the permit.

Construction Stormwater NPDES Permit

The federal Clean Water Act effectively prohibits discharges of stormwater from most construction sites unless the discharge is in compliance with an NPDES permit. The SWRCB is the permitting authority in California and has adopted a statewide General Permit for Stormwater Discharges Associated with Construction Activity (NPDES Permit CAS000002, Order No. 99-08-DWQ) that applies to projects resulting in one or more acres of soil disturbance. The proposed project would result in disturbance of more than one acre of soil. Therefore, the project will require the preparation of a Stormwater Pollution Prevention Plan (SWPPP) that would specify site management activities to be implemented during site

development meeting the requirements of the WDRs and ensuring receiving water quality is protected. These management activities will include construction stormwater best management practices (BMPs), dewatering runoff controls, and construction equipment decontamination. Monitoring and maintenance of BMPs is also required.

The SWRCB requires a Notice of Intent to be filed prior to construction activities, and that the SWPPP be implemented and maintained onsite. This statewide general permit is currently undergoing review by the SWRCB; the project would comply with the current general permit and with any relevant revisions to the permit adopted before or during project construction.

8.14.2.2.2 California Water Code Sections 461 and 13550, and SWRCB Resolution No. 75-58

Water Code section 461 states that the primary interest of the people of the state in the conservation of all available water resources requires the maximum reuse of recycled water in the satisfaction of requirements for beneficial uses of water. In addition, Water Code section 13550 specifically encourages the conservation of potable water resources and the maximum reuse of wastewater for industrial uses (such as VPP) and other uses in areas where recycled water of adequate quality is available at reasonable cost. The VPP project is consistent with these sections of the Water Code because it uses recycled wastewater for cooling.

SWRCB Resolution No. 75-58 adopted the "Water Quality Control Policy on the Use and Disposal of Inland Waters Used for Powerplant Cooling," which provides statewide water quality principles regarding power plants that depend upon inland waters for cooling. Resolution No. 75-58 included several guiding principles for cases where the SWRCB or any of the Regional Board have permit authority over a power plant project, and specifically encouraged the use of wastewater for power plant cooling. The VPP project is consistent with Resolution No. 75-58 because it uses recycled wastewater for cooling.

8.14.2.3 Local Policies

8.14.2.3.1 Sanitation Districts of Los Angeles County

The Clean Water Act requires that publicly-owned treatment works regulate the discharge of industrial wastes into a sewer system subject to an NPDES permit. Accordingly, the LACSD has adopted detailed permit requirements for industrial dischargers. The discharge of any wastewater to the County's sewer system would be subject to the requirements of the County's Wastewater Ordinance, which regulates the quantity and quality of discharges to the sewer system.

VPP wastewater will be discharged into the City of Vernon wastewater collection system, which discharges to the LACSD system and is therefore subject to LACSD regulation. In accordance with the Wastewater Ordinance, VPP would be required to obtain an Industrial Wastewater Discharge Permit (IWDP) from LACSD. The IWDP would specify the detailed project-specific requirements applicable to the VPP, including pretreatment standards, flow restrictions, and sampling, monitoring, and reporting requirements. The application will be submitted during the detailed design phase when the necessary engineering data has been developed. The permit would be issued for a fixed time period, not to exceed 5 years, for Significant Industrial Users such as the VPP project. As a condition of approval for an Industrial Waste Discharge Permit, the applicant may be required to participate in the

District's Self Monitoring Program (SMP). The SMP would require the applicant to furnish chemical analysis of its industrial discharge on a regular basis. The type and frequency of the testing is determined on a case-by-case basis, and are included in the permit requirements.

8.14.2.3.2 Los Angeles County Department of Public Works

On December 13, 2001, LARWQCB adopted Order No. 01-182. This Order is the NPDES Permit (NPDES No. CAS004001) for municipal stormwater and urban runoff discharges within the County of Los Angeles. The requirements of Order No. 01-182 cover 84 cities, including the City of Vernon, and the unincorporated areas of Los Angeles County. Under this, a stormwater quality management program (SQMP) will be implemented that addresses a number of different programs to reduce pollutants in stormwater and urban runoff. One of the programs to be implemented under the SQMP is the Development Planning Program. The Development and Planning Program requires that certain new development or redevelopment projects comply with the Standard Urban Stormwater Mitigation Plan (SUSMP), which outlines the necessary BMPs that are to be incorporated into design plans including BMPs for stormwater treatment and peak flow control.

The VPP falls into the category of "redevelopment" under the SUSMP, and is thus required to follow the SUSMP requirements. Review and approval of the SUSMP will be the responsibility of the City of Vernon as the local agency, and by the Los Angeles County Department of Public Works (acting as the Los Angeles County Flood Control District) as the regional agency for storm drainage and flood control.

8.14.2.3.3 City of Vernon

City of Vernon Code Chapter 21 of the Vernon Municipal Code

For potable water service, VPP will be required to submit an application of service. A similar permit will be required for connection to the City's wastewater collection system. As discussed previously, an Industrial Waste Discharge Permit from the LACSD will be required because the City of Vernon wastewater collection system discharges to LACSD facilities.

City of Vernon Code Chapter 21 of the Vernon Municipal Code regulates the discharge of water to the storm system. Chapter 21 aims to protect the beneficial uses, marine habitats, and ecosystems of receiving waters that are carried by stormwater and non-stormwater discharges. This applies to all stormwater and/or runoff to the storm drain system and/or receiving waters within any area covered by a NPDES municipal stormwater permit. The City code lists prohibited discharges from industrial or commercial activities, unless the discharger complies with an NPDES permit. All surface runoff from the VPP will be governed by one of the statewide general permits or by the Municipal Permit described above.

8.14.3 Hydrologic Setting

8.14.3.1 Surface Water

The VPP site is located in the City of Vernon in Los Angeles County, approximately 5 miles south of the City of Los Angeles. Vernon is located within the Los Angeles River Watershed (Figure 8.14-1). Annual precipitation in Los Angeles County averages about 15 inches, and can vary significantly depending on the location. Under the modified Köppen classification

system, Los Angeles climate is categorized as Mediterranean, with dry summers and rainy winters with a relatively modest transition in temperature (NOAA, 2005).

The project is located within the Los Angeles River Watershed (LARW). The LARW covers approximately 324 square miles. The LARW is diverse in terms of its land use patterns, with portions of it lying in forest or open space; however, the majority of the watershed is highly developed. The Los Angeles River, a primarily concrete-lined river, is approximately 55 miles long and empties into the Pacific Ocean. The Los Angeles River flows through the San Fernando Valley past heavily developed residential and commercial areas, and in some areas is bordered by railyards, freeways, and major commercial and government buildings. From the confluence with the Rio Hondo river to the Pacific Ocean, the Los Angeles River flows through industrial, residential, and commercial areas, including major refineries and petroleum products storage facilities, major freeways, rail lines, and rail yards serving the Ports of Los Angeles and Long Beach.

The Los Angeles River is considered an "impaired water body" as defined by Section 303(d) of the Clean Water Act. The pollutants that have been identified as causing impairment in the Los Angeles River include aluminum, ammonia, cadmium, copper, high chloroform count, lead, algae, pH, scum (foam-unnatural), zinc, odors, oil, dichloroethylene, tetrachloroethylene, and trichloroethylene.

8.14.3.2 Groundwater

Groundwater underlying the project area is contained in the Los Angeles – Orange County coastal plain aquifer system (Figure 8.14-2). The coastal plain basin extends over 860 square miles and includes both Los Angeles and Orange counties. The Los Angeles – Orange County coastal plain basin is bounded on the north and east by the Santa Monica Mountains and the Puente Hills, on the south by the San Joaquin Hills, and on the west by the Pacific Ocean. The mountains are underlain by consolidated rocks of igneous, metamorphic, and marine-sedimentary origin. These consolidated rocks surround and underlie thick unconsolidated alluvial deposits. The major drainages in the basin are the Los Angeles, the San Gabriel, and the Santa Ana Rivers, all of which have headwaters outside the basin (USGS, 2005). Recharge to the groundwater basins mainly occurs through runoff and infiltration; however, increases in impermeable surfaces have caused a decrease in infiltration. Spreading grounds and other facilities operated by the County of Los Angeles have encouraged active recharge of the basins.

8.14.3.3 Flooding Potential

The plant site is not located within a flood hazard zone as defined by the Federal Emergency Management Agency (FEMA).

8.14.4 Water Use and Disposal

This section characterizes the sources of water needed for power generation and other purposes at the VPP facility and how that water would be conveyed for offsite disposal. Also see Section 7 (Water Supply) for additional information.

8.14.4.1 Water Sources and Use

Recycled water for the VPP's process and cooling water, and equipment wash water, will be supplied by the Central Basin Municipal Water District (CBMWD) (see "will serve" letter in Appendix 7A). Additional information on the CBMWD supply and proposed expansion is presented in Section 7.3. The recycled water supply will be pumped to a 2 million-gallon recycled water storage tank via a new pipeline connecting to the recycled water line in Boyle Avenue. The new connecting pipeline would either be a 16-inch carbon steel or 20-inch high density polyethylene pipeline. The Title 22 recycled water will then be divided into supply for the cooling towers and supply for compressor evaporative cooling. Cooling water treatment may require the addition of chemicals such as a pH control agent (acid or caustic), a mineral scale dispersant (i.e., polyacrylate polymer), a corrosion inhibitor (phosphate based), and a biocide (hypochlorite or equivalent). The water to be used in the Heat Recovery Stream Generator unit will be further treated, beginning with a reverse osmosis system followed by an electrodeionization system.

Potable water will be supplied to the site by the City of Vernon, which obtains water from local groundwater wells and from the Metropolitan Water District (MWD). Potable water will be supplied through the existing water supply infrastructure—a 10-inch pipeline in Boyle Avenue and a 10-inch pipeline in Fruitland Avenue—under an application to be submitted to the City of Vernon. It will be used for domestic purposes, for fire protection, and as an emergency water supply for the project. A backup connection will allow potable water to be used for plant makeup in the event that recycled water is not available. This connection will be equipped with an approved back flow preventer.

Water requirements for VPP are presented in Table 8.14-2. Figures 2.2-6a and 2.2-6b illustrate the expected average and peak recycled water use, respectively. Average water use is based on full plant output at ambient conditions of 65°F and 60 percent relative humidity. Under these annualized conditions, VPP would require approximately 6,266 acre-feet of water per year (afy). Instantaneous peak water use is based on full plant output at ambient conditions of 105°F and 35 percent relative humidity.

TABLE 8.14-2
Daily and Annual Water Use for VPP Operations

Water Use	Water Source	Daily Use (gpm[a])		Annual Use (afy[b])
		Average	Maximum	
Recycled Water	Central Basin MWD	3,885	5,000	6,266
Potable Water	City of Vernon	0.21	30	0.34

[a] gpm = gallons per minute
[b] afy = acre-feet per year (based on an annual operation of 8,760 hours/year at full plant output)

In addition to the above, water will be used during construction for dust and erosion control, equipment washing, and other short-term uses. The amount of water used for dust and erosion control is anticipated to be 87 acre-feet during the construction period, and the amount of water for equipment washing is expected to be 0.07 acre-feet during the construction period. Prior to plant startup, additional water (estimated to be 0.34 acre-feet)

will be used for hydrostatic testing. The source of construction water will be the City of Vernon's potable water system.

8.14.4.2 Wastewater Discharge

This subsection characterizes the volume and quality of wastewater that would be generated by VPP and the method of disposal. Estimated daily and annual wastewater discharge rates are provided in Table 8.14-3.

TABLE 8.14-3
Operational Wastewater Discharges from VPP

Waste Discharge Stream	Discharge Location	Daily Discharge (gpm[a])		Annual Discharge (mgy[b])
		Average	Maximum	
Discharge from process and cooling water, backwash water from ultra filters, and reject from reverse osmosis unit	LACSD sanitary sewer system via the City sanitary sewer system	765	975	402
Domestic wastewater	LACSD sanitary sewer system via the City sanitary sewer system	0.21	30	0.11

[a] gpm = gallons per minute
[b] mgy = million gallons per year (based on an annual operation of 8,760 hours/year at 65ºF and 60% relative humidity)

8.14.4.2.1 Industrial Wastewater Discharges.

Cooling tower blowdown will be discharged to the sewer system following five cycles of concentration. In addition, wastewater from miscellaneous plant uses will also be discharged to the sewer system, which ties into the LACSD facilities via a regional trunk sewer line.

8.14.4.2.2 Domestic Wastewater Disposal

Domestic wastewater generated at the VPP, estimated at 0.21 gpm average and 30 gpm maximum, will also be discharged to the LACSD sanitary sewer system. This volume would be considered a *de minimus* increase in demand on the sewer system; i.e., it would not be measurable within the overall dry weather flow and well within the treatment, conveyance, and disposal capacities of LACSD's system.

8.14.5 Precipitation, Stormwater Runoff, and Drainage

Table 8.14-4 provides average and maximum historical rainfall in downtown Los Angeles.

TABLE 8.14-4
Average Monthly Rainfall near the Proposed Project Site

Precipitation	Total	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Average	15.06	0.48	1.34	2.43	3.15	3.21	2.67	1.04	0.31	0.07	0.01	0.05	0.24
Maximum	38.18	6.96	9.68	15.80	14.94	13.68	12.36	7.53	3.57	1.39	0.24	2.26	5.67

Source: NOAA, 1999.

Stormwater runoff under current conditions drains to the existing storm drain system, maintained by the Los Angeles County Department of Public Works (acting as the Los Angeles County Flood Control District). Existing runoff volume is estimated to be approximately 18.23 cubic feet per second (cfs), or 2.89 acre feet during a 10-year storm event (120 minutes at 0.75 inches per hour).

8.14.6 Effects on Water Resources

Significance criteria are derived from the California Environmental Quality Act Appendix G checklist. The project is considered to have a potentially significant effect if it would:

- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation on- or offsite or in flooding on- or offsite.
- Create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff.
- Violate any water quality standards or waste discharge requirements or otherwise substantially degrade water quality.
- Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level that would not support existing land uses or planned uses for which permits have been granted).
- Place within a 100-year flood hazard area structures that would impede or redirect flood flows.
- Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam.
- Cause inundation by seiche, tsunami, or mudflow.

8.14.6.1 Drainage

The project site is currently in use with an existing stormwater collection system and with impervious surfaces covering the entire site. The volume and rate of runoff from the project site would be reduced as a result of project development because the VPP site will contain less impervious surfaces and peak flow control BMPs not present under current conditions. The project site will be designed to capture stormwater runoff in a series of swales and drainage inlets that would convey runoff to a stormwater detention basin prior to discharge into the Los Angeles County Department of Public Works (LACDPW) storm drain system (Figure 8.14-3). Drainage calculations for the stormwater detention basin are provided in Appendix 8.14A.

The total developed site area is approximately 13.7 acres. Impervious surfaces (i.e., buildings and pavement) cover the entire existing site. After project development, approximately 9 percent of the site would be dedicated to areas that would retain runoff (i.e., the cooling tower, ammonia unloading area, and the step-up/auxiliary transformer areas). These areas

would not discharge to the storm drain system and, therefore, would not contribute to the peak flow associated with the drainage system design storm. For the remaining developed project areas, approximately 51 percent would be impervious surfaces (i.e., buildings, equipment, foundations and pavement), and 40 percent would be pervious surfaces (i.e., crushed stone surfacing and grass). Therefore, flow from the VPP site will be less than flow from the site under current conditions.

The plant storm drainage system will be designed in accordance with LACDPW requirements, including the LACDPW Hydrology Manual and all addendums. An LACDPW Flood Permit Application is required for connection to the existing LACDPW storm sewer system. Stormwater flow into the existing LACDPW storm sewer system is limited by the available LACDPW storm drain capacity, and a stormwater detention basin is required to reduce the stormwater flow below the LACDPW maximum specified flow rates. As shown in Appendix 8.14A, the onsite stormwater detention basin has been sized to adequately retain stormwater from a 10-year rainfall event for gradual release into the storm drain system; however, final design of the basin and its connection points to the storm drainage system will be developed during the detailed design phase of the project in consultation with LACDWP. Consultation with LACDPW and successful issuance of the Flood Permit will ensure that drainage impacts are mitigated to a less-than-significant level.

Additionally, because this site is considered "redevelopment" as defined by the City of Vernon, a drainage concept and stormwater quality plan will be submitted to the City that includes details of facilities and measures that mitigate impacts to water quality. Redevelopment is described as land-disturbing activity that results in the creation, addition, or replacement of 5,000 square feet or more of impervious surface area on an already developed site. Redevelopment includes, but is not limited to: the expansion of a building footprint; addition or replacement of a structure; replacement of impervious surface area that is not part of a routine maintenance activity; and land disturbing activities related to structural or impervious surfaces. This is discussed in more detail in Subsection 8.14.6.3 (Stormwater Quality [Operations Phase]).

8.14.6.2 Stormwater Quality (Construction Phase)

During construction, approximately 13.7 acres of land associated with the plant site and additional areas along the linear corridors (e.g., sewer and gas lines) would be disturbed. The 13.3-acre property that will be used for construction laydown and parking would have previously been disturbed by the property owner in the process of removing the existing buildings and structures prior to its transfer to the City. Surface water impacts are anticipated to be related primarily to short-term construction activity and consist primarily of increased potential for turbidity due to erosion of newly excavated or placed soils. Activities such as grading can potentially increase rates of erosion during construction. In addition, construction materials could contaminate runoff or groundwater if not properly stored and used. Compliance with engineering and construction specifications, following approved grading and drainage plans, and adhering to proper material handling procedures will ensure effective mitigation of these short-term impacts. Best management practices for erosion control will be implemented. Additionally, erosion and sediment controls, surface water pollution prevention measures, and other BMPs will be developed and implemented for construction in accordance with the NPDES Construction Permit issued statewide by the State Water Quality Control Board and local agency requirements.

To qualify for the NPDES General Construction permit, the construction contractor will be required to develop a SWPPP (prior to beginning construction), to reduce or prevent the offsite migration of sediment and other pollutants and to reduce the effects of runoff from the construction site to offsite areas. BMPs implemented during construction will be required to meet the technology-based standards of the permit and must assure that violations of receiving water standards do not occur. BMPs will be site-specific and will be modified during construction depending on the phase of construction and weather conditions. BMPs will be selected from a menu of options to most appropriately reflect site conditions and meet regulatory requirements; BMPs to be contained in the SWPPP will include erosion controls (such as soil binders), sediment controls (such as gravel barriers and silt fencing), masonry and paint waste management controls, hazardous material protected programs, material storage and waste management controls, tracking controls (such as protected construction site entrances), wind erosion controls, dry weather flow management, and training components. A copy of the Notice of Intent to the State Water Quality Control Board and a draft SWPPP for construction is provided as Appendix 8.14B. Successful implementation of the SWPPP will ensure that construction impacts to water resources are mitigated to a less-than-significant level.

8.14.6.3 Stormwater Quality (Operations Phase)

As described above, stormwater from the site will be discharged to the LACDPW storm drain system. Because this site is considered "redevelopment," a Standard Urban Stormwater Management Plan (SUSMP) will be submitted to the City of Vernon and LACDPW that includes details of facilities and measures that mitigate impacts to water quality. Consultation with LACDPW on specific facilities and measures will occur during the process of applying for a Flood Permit (see above). The planned onsite detention basin is an example of a structural BMP that will improve stormwater quality; other structural BMPs could be required by LACDPW during review of the Flood Permit Application. Compliance with the SUSMP requirements as implemented by LACDPW will reduce any impact from stormwater runoff to a level of less than significant.

In addition to review and approval of the SUSMP, LORS compliance also requires preparation of a SWPPP for industrial operations. The industrial SWPPP will require a suite of good housekeeping requirements including steps to identify and mitigate pollutants and conditions of concern. BMPs to be implemented during operations will be selected to address the potential pollutants generated onsite and will address industrial areas exposed to the elements, material loading and storage areas, dust generating activities, spill and leak prevention, potential non-stormwater flows and prohibitions on discharge of certain non-stormwater flows (such as boiler blowdown), waste handling, and employee training. Inspections and monitoring (including sampling) will also be conducted per the permit requirements. Compliance with the SUSMP would compliment the requirement to prepare and implement a SWPPP for industrial activities. A draft SWPPP for industrial operations and a copy of the Notice of Intent form to the State Water Quality Control Board is provided as Appendix 8.14C. Through the SUSMP and statewide industrial stormwater permit program, all potential pollutants generated during the industrial phase will be sufficiently mitigated such that the beneficial uses of downstream receiving waters will be protected and water quality standards (established in the Basin Plan or any adopted programs addressing impairments in the Los Angeles River) will not be violated. Therefore, impacts from water quality during the operations phase will be less than significant.

8.14.6.4 Waste Discharge Requirements

Circulating (or cooling) water system blowdown will consist of recycled water that has been concentrated at approximately five cycles of concentration and residues of the chemicals added to the circulating water. These chemicals will control scaling and biofouling of the cooling tower and corrosion of the circulating water piping and condenser tubes. Cooling water treatment will require the addition of chemicals such as: a pH control agent (e.g., sulfuric acid), a mineral scale dispersant (e.g., polyacrylate polymer), a corrosion inhibitor (phosphate-based), and a biocide for algae control.

Wastewater from miscellaneous plant uses will be discharged to the City of Vernon sanitary sewer facilities, which tie into the LACSD system. Cooling tower blowdown will also be discharged to the sewer system, as required to maintain the level of dissolved solids in the cooling water within acceptable ranges.

Table 8.14-5 summarizes the estimated water quality of wastewater discharges to the sanitary sewer system, based on five cycles of concentration of the cooling tower blowdown. The constituents listed below were selected based on the LACSD's Wastewater Ordinance.

TABLE 8.14-5
Summary of Average Water Quality Characteristics for VPP Wastewater Compared to LACSD Industrial Discharge Limits

Constituent	Wastewater (mg/L)	Maximum Allowable Concentration at Any Time[a] (mg/L)
Cyanide (total)	0.03	10
Arsenic	0.005	3
Cadmium	0.001	15
Chromium (total)	0.155	10
Copper	0.005	15
Lead	0.05	40
Mercury	0.0002	2
Nickel	0.2325	12
Silver	0.00077	5
Zinc	0.255	25
TICH[b]	Likely 0 mg/L	Essentially None
pH	7.6	> 6.0
Dissolved sulfide[c]	Likely 0 mg/L	0.1
Temperature (°F)	< 120	< 140

[a] Source: LACSD, 2005a.

[b] Total Identifiable Chlorinated Hydrocarbons (TICH) include such pesticides as aldrin, dieldrin, chlordane, DDT, endrin, hexachlorocyclohexane, toxaphene, and PCBs. TICH influent concentrations are unknown, but chlorinated hydrocarbons will likely be destroyed during treatment to meet Title 22 standards, resulting in an influent concentration of 0 mg/L.

[c] Dissolved sulfide concentrations are unknown, but sulfides would be removed during treatment to meet Title 22 standards, resulting in an influent concentration of 0 mg/L.

Quality and quantity of industrial wastewater discharges to the LACSD's sanitary sewer system must be in compliance with an Industrial Wastewater Discharge Permit to be issued by LACSD (see "will serve" letter attached as Appendix 8.14D). As shown in Table 8.14-5, the anticipated quality of wastewater discharges from VPP would be well within the LACSD's discharge limitations. Meeting these industrial discharge limitations indicates that water quality downstream of the affiliated treatment plant will be protected. In addition, this relatively clean discharge would be an asset to LACSD because of its ability to dilute poorer quality wastewater streams. Therefore, impacts to the wastewater system, including the ultimate water quality objectives for treated wastewater, would be less than significant.

8.14.6.5 Groundwater

The VPP would not make any direct use of groundwater resources.

8.14.6.6 Flooding Potential

The general region is flat and there are no significant dams or levees in the project vicinity. Additionally, the project site is also flat and would remain generally flat after development. The site grading and drainage will be designed to comply with all applicable federal, state, and local regulations. The general site grading will establish a working surface for construction and plant operating areas, and will provide positive drainage from buildings and structures to reduce the potential of onsite flooding hazards. The project is not located in a flood hazard zone, as defined by FEMA, indicating it is likely in a moderate, minimal hazard area.

The project would not expose people or structures to significant risk of loss, injury or death resulting from a levee or dam failure. Similarly, the project is located approximately 14.5 miles from the Pacific Ocean and any potential inundation from seiche, tsunami, or mudflow is remote.

8.14.7 Mitigation

This section presents mitigation measures proposed to reduce impacts to water resources in areas affected by the project.

- Implement BMPs designed to minimize soil erosion and sediment transport during construction of the plant site and project linear features. Implement and maintain appropriate erosion and sediment controls for slopes, catch basins, culverts, stream channels, and other areas prone to erosion in accordance with the draft [construction phase] Stormwater Pollution Prevention Plan included in Appendix 8.14B. Implement and maintain BMPs for material management in accordance with the draft SWPPP.
- Implement the requirements of the Standard Urban Stormwater Mitigation Plan by designing and installing structural BMPs (such as the planned stormwater detention basin) as directed by the City of Vernon and LACDPW during the Flood Permit application process.
- Conduct operations at the plant site in accordance with the statewide General Permit for Industrial Activities, as recommended by the City of Vernon and LACDPW during review of the Standard Urban Stormwater Mitigation Plan. Implement a suite of good housekeeping requirements including steps to identify and mitigate pollutants and conditions of concern. Select BMPs to be implemented during operations to address the

potential pollutants generated on site and will address industrial areas exposed to the elements, material loading and storage areas, dust generating activities, spill and leak prevention, potential non-stormwater flows and prohibitions on discharge of certain non-stormwater flows (such as boiler blowdown), waste handling, and employee training. Conduct inspections and monitoring (including sampling) per the requirements of the statewide General Permit. Design and implement the BMPs to prevent or control pollutants potentially associated with the operation of the plant from entering storm drains in accordance with the final Stormwater Pollution Prevention Plan, an administrative draft of which is included in Appendix 8.14C.

The mitigation measures proposed are prescribed by stormwater and erosion control management programs mandated under the NPDES permitting system. These programs have been in place for a number of years and the prescribed measures have proven effective. Under the General NPDES Permits for Construction and Industrial Stormwater, for example, various specific measures are prescribed, and a program of monitoring is required. Compliance with these programs should ensure that all residual impacts associated with the proposed project are mitigated to a level of less than significant.

8.14.8 Proposed Monitoring Plans and Compliance Verification Procedures

Routine monitoring and compliance verification would be required as part of the industrial discharge permit and construction/operation stormwater NPDES permitting of the project.

8.14.9 Cumulative Impacts

The VPP project will not cause or contribute to cumulative impacts on water resources. Good engineering practices and BMPs will be used in the project design and operation. Stormwater discharge will adhere to a SWPPP and to state and local agency water quality standards. The SUSMP program is a regional program addressing water quality for all new development and redevelopment in the region and was designed specifically to mitigate the cumulative impacts of such development on the Pacific Ocean and on local waterways such as the Los Angeles River. The VPP's compliance with the SUSMP constitutes compliance with a regional water quality program further ensuring that cumulative impacts to local waterways are avoided. Drainage volumes and peak flow rates from the site will be lower with the VPP than under existing conditions. No significant impacts to surface water or groundwater quality are expected during construction or operation of the project. The project will contribute to water conservation by making use of recycled water for power plant cooling.

8.14.10 Permits Required

A summary of required permits is provided in Table 8.14-6.

8.14.11 Agency Contacts

Agency contacts and required permits are listed in Table 8.14-6.

TABLE 8.14-6
Permits and Permitting Agencies for VPP Water Resources

Permit	Schedule	Agency
Industrial Wastewater Discharge Permit	Minimum of 90 days prior to the commencement of the discharge	LACSD PO Box 4998 Whittier, CA 90607-4998 Contact: James F. Stahl, Chief Engineer and General Manager (562) 699-7411
SUSMP	This occurs during the submittal phase for the design plans to the city for agency review	City of Vernon 4305 Santa Fe Avenue Vernon CA 90058 Contact: Kevin Wilson, Director of Community Services (323) 583-8811
Use of the National Pollution Discharge Elimination System General Permits for Construction and Operation	Submit Notice of Intent to use the permit at least 30 days in advance of use, prepare SWPPP for local review for construction, second SWPPP for operation	SWRCB Stormwater Program Phone: (916) 341-5537
Recycled Water User Agreement	The City of Vernon's existing User Agreement with the CBMWD has been amended for this project.	Central Basin Municipal Water District 17140 South Avalon Blvd, Ste. 210 Carson, CA 90746-1296 (310) 217-2222
Application of Service for Potable Water	60 days prior to the start of construction.	City of Vernon 4305 Santa Fe Avenue Vernon, CA 90058 Contact: Kevin Wilson, Director of Community Service & Water Department (323) 583-8811

8.14.12 References

California Department of Water Resources (DWR). 1961. Planned Utilization of the Groundwater Basins of the Coastal Plain of Los Angeles County. Bulletin No. 104.

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Los Angeles Regional Water Quality Control Board (LARWQCB). 2004. *State of the Watershed – Report on Surface Water Quality. The Los Angeles River Watershed*. October.

National Oceanic and Atmospheric Administration (NOAA). Online Information. http://www.wrh.noaa.gov/lox/climate/climate_intro.php. Accessed September 2005.

National Oceanic and Atmospheric Administration (NOAA). Online Information: http://www.wrh.noaa.gov/lox/climate/data/cvc_rainfall.html. Last updated October 14, 1999. Accessed October 6, 2005.

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State Water Resources Control Board (SWRCB). 1999. Waste Discharge Requirements for Discharges of Storm Water Runoff Associated with Construction Activity, General Permit No. CAS000002. Adopted August 19.

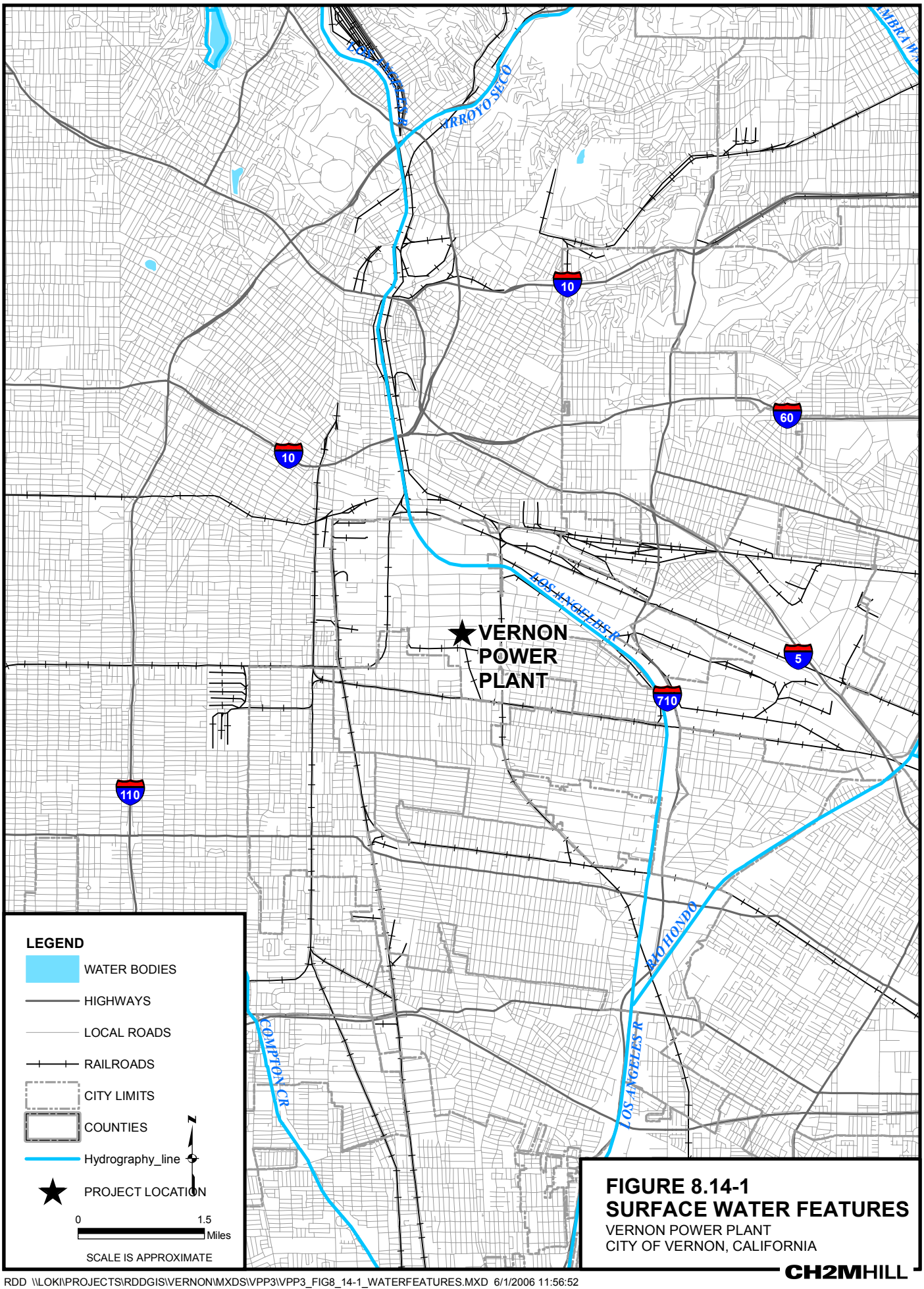

FIGURE 8.14-1
SURFACE WATER FEATURES
VERNON POWER PLANT
CITY OF VERNON, CALIFORNIA

CH2MHILL

RDD \\LOKI\PROJECTS\RDDGIS\VERNON\MXDS\VPP3\VPP3_FIG8_14-1_WATERFEATURES.MXD 6/1/2006 11:56:52

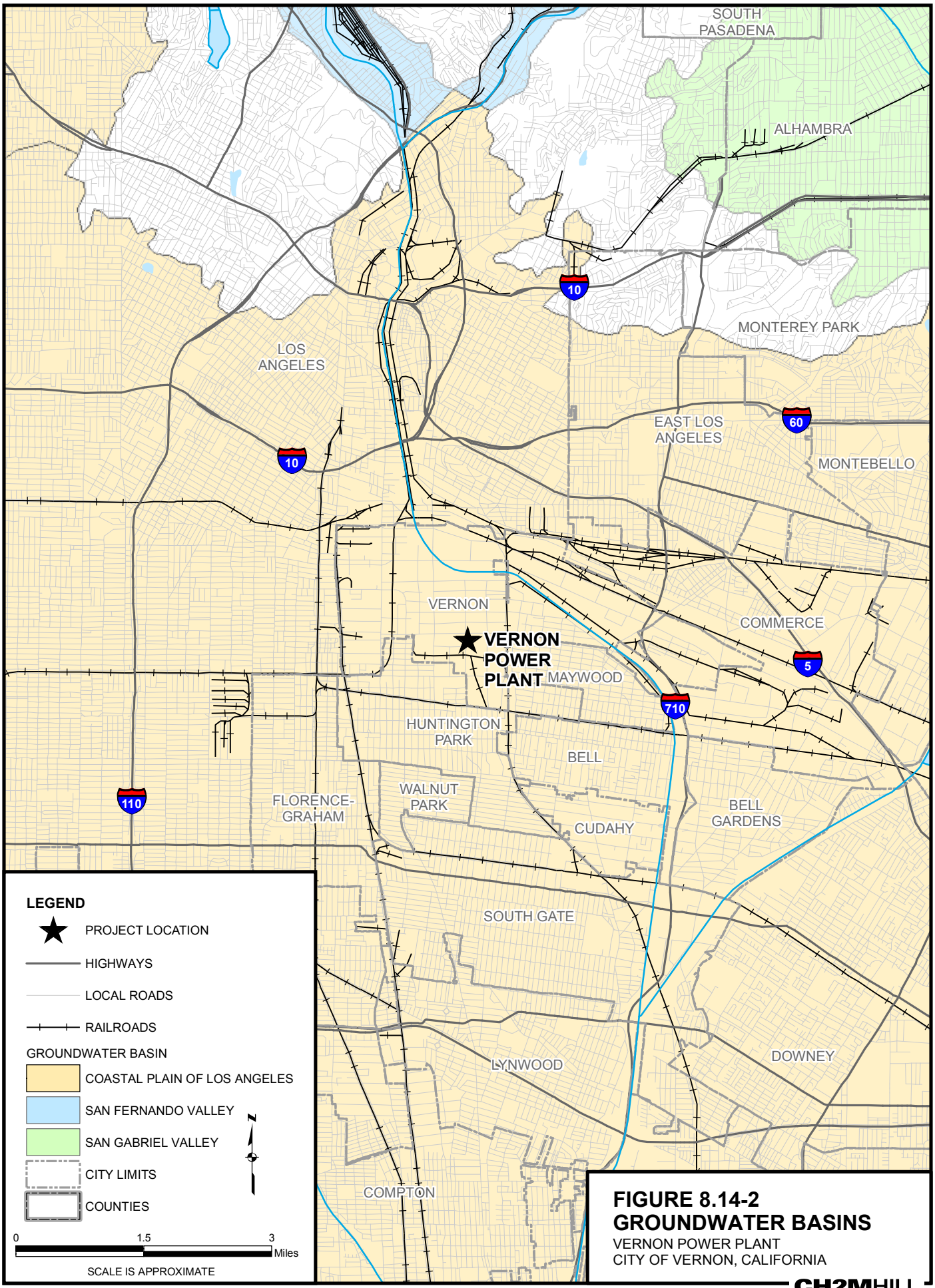

FIGURE 8.14-2
GROUNDWATER BASINS
VERNON POWER PLANT
CITY OF VERNON, CALIFORNIA

CH2MHILL

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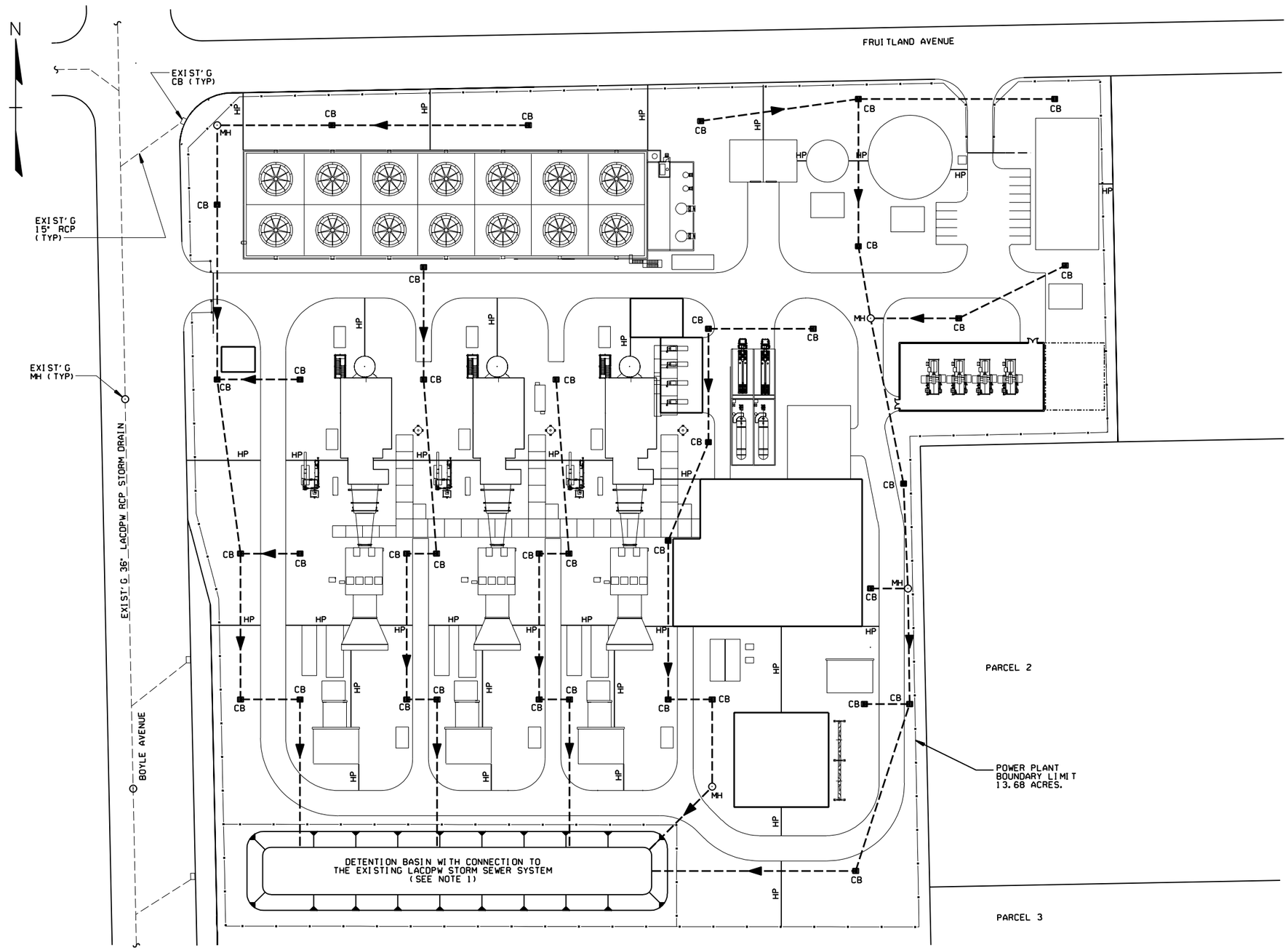

NOTES

1. PLANT STORM WATER DRAINAGE SYSTEM REQUIREMENTS

A. THE PLANT STORM DRAINAGE SYSTEM SHALL BE DESIGNED IN ACCORDANCE WITH LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS (LACDPW) FLOOD CONTROL DISTRICT REQUIREMENTS, INCLUDING THE LACDPW HYDROLOGY MANUAL AND ALL ADDENDUMS. AN LACDPW FLOOD PERMIT APPLICATION SHALL BE OBTAINED FOR CONNECTION TO THE EXISTING LACDPW STORM SEWER SYSTEM, AND SHALL INCLUDE ALL REQUIRED HYDROLOGY CALCULATIONS, HYDRAULIC CALCULATIONS AND CONSTRUCTION DRAWINGS.

B. STORM WATER FLOW INTO THE EXISTING LACDPW STORM SEWER SYSTEM SHALL BE LIMITED TO THE FLOW RATES SPECIFIED BY LACDPW. EXISTING LACDPW STORM SEWER SYSTEMS ARE LOCATED ALONG BOYLE AVENUE, ADJACENT TO THE PROJECT, AND ALONG ALCOA AVENUE (LOCATED APPROXIMATELY 1200 FEET EAST OF BOYLE AVENUE).

C. A STORM WATER DETENTION BASIN SHALL BE PROVIDED, AS REQUIRED, TO LIMIT STORM WATER FLOW INTO THE LACDPW STORM SEWER SYSTEM TO THE LACDPW SPECIFIED FLOW RATES. CONNECTION TO THE EXISTING LACDPW STORM SEWER SYSTEM SHALL BE IN ACCORDANCE WITH APPLICABLE LACDPW REQUIREMENTS.

D. THE PLANT STORM DRAINAGE SYSTEM SHALL ALSO BE DESIGNED IN ACCORDANCE WITH THE LOS ANGELES COUNTY STANDARD URBAN STORM WATER MITIGATION PLAN (SUSMP) TO CONTROL STORM WATER POLLUTION. STRUCTURAL OR TREATMENT CONTROL BEST MANAGEMENT PRACTICES (BMP'S) SHALL BE INSTALLED TO TREAT STORM WATER IN ACCORDANCE WITH SUSMP REQUIREMENTS.

2. FOR PLANT EQUIPMENT DESIGNATION AND LOCATIONS SEE FIGURE 2.2-1.

LEGEND

- STORM DRAIN LINE
- CATCH BASIN INLET
- MANHOLE
- HP HIGH POINT

GRAPHIC SCALE
0 25' 50' 100' 150'

FIGURE 8.14-3
DRAINAGE PLAN
VERNON POWER PLANT
CITY OF VERNON, CALIFORNIA

Source: Burns and Rowe, Dwg. No. C200, Rev. B.